

Claims

1. A system for extracting heavy metal from glass waste, comprising:
 - a grinding device for crushing glass waste into crushed glass particles;
 - a screen for filtering the crushed glass particles out into filtered glass particles having a diameter size of less than or equal to 2 millimeters;
 - a conveyor for transporting the filtered glass particles into a tank having a solution of water and acid; and
 - a circulating pump device for circulating the filtered glass particles and the solution within the tank for a first period of time, producing treated glass particles where the heavy metals are extracted from the filtered glass particles and the heavy metals are mixed with the solution producing a modified solution.
2. The system of claim 1 further comprising a solution-pumping device for pumping the modified solution out of the tank.
3. The system of claim 2, further comprising:
 - a water supply device for adding water to the tank after the modified solution is pumped out of the tank;
 - a screen and conveyor device for removing the treated glass particles from the tank.
4. The system of claim 3 further comprising a water treatment device for bringing the water to a safe potential Hydrogen (pH) level and for filtering out other contaminants which remain in the water.
5. The system of claim 1 wherein the circulating pump circulates the solution and the filtered glass particles at a rate of about 100 gallons per minute within the tank.
6. The system of claim 1 wherein the circulating pump circulates the solution and the filter glass particles for 2 hours or more, which is the first period of time.

7. The system of claim 1 wherein the modified solution is reused with the system for subsequent iterations where heavy metal is being extracted from additional glass waste.
8. A system for extracting heavy metals from glass waste, comprising:
 - a grinding device that grinds the glass waste into glass particles having a diameter sizes of less than or equal to 2 millimeters; and
 - a processing tank that receives the glass particles and receives a solution of water and acid, wherein the glass particles and the solution are circulated within the tank to extract the heavy metals from the glass particles and produce treated glass particles and the extracted heavy metals mix with the solution to produce a modified solution.
9. The system of claim 8 wherein the processing tank includes a circulating device, which circulates the solution and the glass particles.
10. The system of claim 9 wherein the circulating device circulates the solution and the glass particles for a configurable period of time.
11. The system of claim 8 further comprising a pumping device that pumps the modified solution out of the tank.
12. The system of claim 8 further comprising a conveyor device that transports the treated glass particles out of the tank.
13. The system of claim 8 further comprising a screen device that filters out the filtered glass particles into the tank and re-supplies the grinding device with the glass waste that is greater than 2 millimeters in diameter sizes.
14. The system of claim 8 further comprising a rinsing tank that receives the treated glass particles and tap water for rinsing the treated glass particles with the tap water.

15. A system for extracting heavy metals from glass waste, comprising:
a screen and conveyor device that filters out glass particles from the glass waste that are less than or equal to 2 millimeters in diameter sizes, and transports the glass particles to a processing tank; and
the processing tank having the glass particles and a solution of water and acid, wherein the glass particles are circulated within the processing tank with the solution and thereby produces treated glass particles where the heavy metals have been extracted, and wherein the extracted heavy metals are mixed with the solution to produce a modified solution.
16. The system of claim 15 further comprising a grinding device that crushes the glass waste into the glass particles which are supplied to the screen and conveyor device.
17. The system of claim 15 further comprising a pumping device for pumping the modified solution out of the processing tank.
18. The system of claim 15 wherein the processing tank includes a circulating pump that circulates the glass particles and the solution within the processing tank.
19. The system of claim 15 further comprising a rinsing tank that includes tap water within the rinsing tank and receives the treated glass particles.
20. The system of claim 19 further comprising a water treatment device for treating the tap water after the treated glass particles are removed from the rinsing tank.